

Government  
Institute for  
Economic Research

# Working Papers 20

The effect of church tax on  
church membership

*Teemu Lyytikäinen*

*Torsten Santavirta*

Working Papers 20 December 2010



# VATT WORKING PAPERS

20

## The effect of church tax on church membership

Teemu Lyytikäinen \*

Torsten Santavirta \*\*

\* Teemu Lyytikäinen, London School of Economics, Spatial Economics  
Research Centre

\*\* Torsten Santavirta, Department of Economics, Aalto University School of  
Economics and Swedish Institute for Social Research (SOFI), Stockholm  
University

ISBN 978-951-561-957-0 (nid.)  
ISBN 978-951-561-958-7 (PDF)

ISSN 1798-0283 (nid.)  
ISSN 1798-0291 (PDF)

Valtion taloudellinen tutkimuskeskus  
Government Institute for Economic Research  
Arkadiankatu 7, 00100 Helsinki, Finland

Oy Nord Print Ab  
Helsinki, December 2010

Graphic design: Niilas Nordenswan

# The effect of church tax on church membership

Government Institute for Economic Research  
VATT Working Papers 20/2010

Teemu Lyytikäinen – Torsten Santavirta

## Abstract

In this study we examine the effect of church tax on the church membership decision using Finnish data. We present both descriptive statistics from an opting-out website and econometric evidence exploiting the panel structure of a large individual-level data set. Our descriptive analysis shows that opting-out is concentrated towards the last days of the year, i.e., the last chance to avoid paying church tax for the entire coming year. Our econometric evidence suggests however, that the average effect of tax incentives in the whole population is very small in magnitude, while being statistically significant. The price elasticity of church membership is roughly  $-0.01$ . In addition, we find that church membership dropped substantially when a law change made opting-out significantly easier. This finding suggests that transaction costs play an important role in the membership decision.

Key words: Church tax, church membership, transaction cost

JEL classification numbers: H24, H31, Z12

## Tiivistelmä

Tässä tutkimuksessa analysoidaan kirkollisveron vaikutusta kirkkoonkuulumispäätöksiin hyödyntäen suomalaista tilastoaineistoa. Esittelemme sekä internetin kautta tapahtuvaa kirkosta eroamista koskevaa kuvailevaa analyysia että suureen yksilötason paneeliaineistoon perustuvaa ekonometrista analyysia. Kuvaileva analyysimme osoittaa, että kirkosta eroaminen keskittyy vuoden loppuun, jolloin on viimeinen mahdollisuus välttyä maksamasta kirkollisveroa tulevana vuonna. Ekonometriset tulokset viittaavat kuitenkin siihen, että koko väestön tasolla veroinsentiivien keskimääräinen vaikutus kirkkoon kuulumiseen on hyvin pieni, vaikkakin tilastollisesti merkitsevä. Kirkon jäsenyyden hintajousto on noin  $-0,01$  eli hinnan noustessa prosentilla jäsenmäärä vähenee  $0,01$  prosentilla. Tuloksemme näyttävät lisäksi, että kirkkoon kuuluminen väheni merkittävästi kirkosta eroamista helpottavan lakimuutoksen myötä. Tulos viittaa siihen, että eroamis-

prosessiin kuluva aika ja vaiva sekä eroajan yksityisyyden suoja vaikuttavat merkittävästi jäsenyyspäätökseen.

Asiasanat: Kirkollisvero, kirkon jäsenyys, transaktiokustannus

JEL-luokittelu: H24, H31, Z12

# 1 Introduction

Even though most European countries are secularized, state church continues to have a potent stronghold on society as a whole and on people's daily life in many countries. However, there is a high rate of members opting out from church each year, particularly in the Nordic countries. The declining popularity of such a central institution in society has given rise to surprisingly little study by economists on the implications of the cost of participation on people's decision to participate. In other social sciences, such as sociology, the declining religious adherence, or secularization, has produced a number of articles.<sup>1</sup>

In this study we examine the effect of the cost of church membership, i.e., the amount of money paid in the form of church tax, on the membership decision using Finnish data. In Finland 81.7 percent of the population belonged to a state church (Evangelical Lutheran Church of Finland or Finnish Orthodox Church) as of 2007.<sup>2</sup> Each year roughly 85 percent of the newborns are baptized into state church. The rate of individuals who opt out from state church has however increased drastically over the last years while the rate of adults who join back has remained constant. In year 2006 roughly 35,000 individuals opted out from church while some 10,000 individuals joined back (after having opted out at some point during adulthood). Surveys often

---

<sup>1</sup>See Francis and Katz (2000) for an extensive overview of the study of joining and leaving religion in different disciplines.

<sup>2</sup>In Germany roughly 67 percent of the population of 82.1 million belonged to one or the other of the two state churches; the Protestant Church and the Catholic Church 27.2 million.

show that the principal reason for opting out is the church tax.<sup>3,4</sup> This implies that people, at least to some extent, weigh their benefits of church membership against the cost of being a member in making their participation decision. Each year a person decides whether she wants to be a member or not in the following year. The decision is made for the following year as the Finnish Tax Administration (FTA) revises each individual's membership status in January 1 each year. In other words, one is tax liable the entire year in the year of opting out and tax liable the entire following year after the year of joining (but exempt from taxes in the year of joining).

There is to our knowledge no study by economists on the implications of church tax, i.e., the cost of membership, for people's religious participation. One reason is perhaps, that the religious communities are in relatively few countries funded by a pay-to-play system, such as by a tax levied on their members' income.<sup>5</sup> In most Western countries a church tax would be inconsistent with the constitutional separation of church and state. Finland is however not the only exception. For instance, Austria, Germany, Sweden, Denmark, and Iceland all impose a similar tax

---

<sup>3</sup>In Finland the church tax is an separate income tax. It varies between 0.75 and 2.25 percent depending on the municipality of residence and is set by a democratically elected parish council. Figure 1 displays a distribution of the church tax rates in 2006. For comparison, the tax in Germany is 8 or 9 percent of the income tax, i.e., a person paying an income tax of 20 percent pays a church tax of 1.6 percent.

<sup>4</sup>Heino, Salonen, Rusama, and Ahonen (1997) and Lumijärvi (1998) both find in their survey studies that the high cost is the main reason for leaving church in Finland, 24 percent and 28 percent of the surveyees respectively, being of that opinion. In a survey from the UK by Richter and Francis (1998) only 1 percent mention the high cost as the main reason for leaving church.

<sup>5</sup>Daniel Hamermesh writes "...religious organizations are public goods [in the United States]; it's easy to enjoy the services offered (pun intended) without paying your fair share of the costs." [*The New York Times, Freakonomics Blog*, October 14, 2008] Membership to state church is not a requirement for enjoying some of the services provided by church even in a pay-to-play system. Church's approach tends to be rather inclusive with respect to, e.g., foreign non-members and its charity extends to all people in need. See Appendix C for a list of services that are limited for members.



on members of their largest religious congregations. Another reason for the lack of research on the effect of church tax on membership decisions may be the difficulty to separate the effect of the price each person actually pays for being a member of church from the effect of income, since the church tax is directly proportional to income in countries like Germany. Finland has dual income taxation, with a progressive payroll tax and a flat rate capital income tax. Since church tax is levied only on wage income, the price of church membership does not vary one-to-one with income. Moreover, church tax rates vary substantially across regions and over time.

We present both descriptive statistics and formal econometric evidence exploiting the panel structure of a large individual-level data set to establish how economic incentives affect the participation decision of being a member of state church.<sup>6</sup> Our first empirical argument relies on the timing of opting out within the year. Members are tax liable the entire calendar year in the year of opting out. Thus, an increased rate of opting out towards the end of the year would suggest that the ones who opt out have a positive valuation for the religious activities to which membership entitles. Our formal econometric analysis relies on individual level variation over time in church tax paid. Controlling for individual heterogeneity in unobservable time-invariant potential confounders, we explore how the variation over time in the individuals cost of membership affects her probability of membership. The analysis allows us to quantify the impact of the price paid for membership, in the form of church tax, on the decision to participate in church.

In our descriptive analysis using data on the timing of opting out from church,

---

<sup>6</sup>Our data set contains 10,501,554 individual/year cells for 1,142,977 individuals over the years 1996-2006.

we find that individuals delay their opting out decisions towards the end of the year, i.e., when no additional cost of membership is incurred, membership is on average prolonged. Our econometric evidence supports the idea that opting out is, to some extent, an economic decision. The effect of church tax is however, while being statistically significant, very small in magnitude. The elasticity of church membership with respect to price evaluated at the means of all variables is roughly -0.01. An interesting additional finding is that church membership dropped substantially when the law change made opting out significantly easier.

This study contributes to the public finance literature by providing the first empirical analysis on the impact of church tax on church membership. It also contributes to the growing fields of empirical literature that have studied the causes and consequences of religious participation and highlighted the interaction between economic decisions and the religious sector.<sup>7</sup> Literature on the causes of religious participation has, for instance, documented that religious giving and religious attendance are substitutes (Gruber 2004). Studies on the consequences of religious participation have mainly found positive effects. Gruber (2005) finds that increased religious participation leads to higher educational attainment and income. Deheija, DeLeire, and Luttmer (2007) find, using data from a consumer expenditure survey and a life satisfaction survey, that households who contribute to a religious organization are better able to insure their consumption against income shocks, and that attending religious services may enable individuals to insure their happiness against income shocks. Another interesting strand of literature has studied the interaction of the public sector

---

<sup>7</sup>Iannaccone (1998) discusses extensively the economic models of religiosity.

spending and the religious sector. Gruber and Hungerman (2007) and Hungerman (2005) find that government spending crowds out charitable church activities.

It is already at this stage important to emphasize that we are solely examining the decision on membership to church, not religiosity in itself. We thus refer to religious participation in a somewhat different manner than our predecessors in the literature, who measure religious participation as attendance at religious services (e.g. Gruber 2004) or the number of hours devoted to religious services. In other words, we make no aspirations on explaining the change in religiosity, beliefs, or values of individuals or societies. Church's popularity might decline as people find other ways than state church to practice their spirituality or religiosity. The increasing popularity of opting out from state church may thus not be a consequence of decline in belief among people.

The rest of the paper is organized as follows. Section 2 describes the institutional setting. Section 3 presents the data used in the econometric analysis. Section 4 presents the results from the regression analysis and Section 5 concludes.

## **2 Institutional Setting and the Website Data Evidence**

Membership or affiliation to a state church in Finland implies that an individual is allowed to participate in religious services provided by the church and contributes to the church's finances through payroll tax. The tax rate is between 0.75 and 2.25 percent of the individual's taxable earned income (wage and certain benefits less

deductions) varying across municipalities. As mentioned in Section (1), the FTA updates each individual's church membership status yearly according to membership status at the first day of the calendar year. From the leaver's point of view, this implies that, in the year of opting out, she can prolong her affiliation to church until the last day of the year without incurring any extra costs. The church tax for the last year of affiliation can thus be considered as a sunk cost from the first day of the year on.

The Law of freedom of conviction was revised in year 2003 enabling the filing of the opting out announcement by mail.<sup>8</sup> Prior to the August 1, 2003 leavers needed to hand in the announcement personally to an administrative council. From an economic point of view the interesting feature of the change in legislation is that it dramatically lowered the transaction costs of the opting out procedure. Even though opting out did not imply any pecuniary costs except for the potential bus ticket or parking fee, the time and effort spent on this procedure at regular office hours is a relatively high transaction cost. Moreover, having to face church personnel when filing the opting-out form may have caused fear for stigma and thus have constituted a significant mental cost to many people before the law change.

The new law of freedom of conviction combined with the law change that gave equal legally binding status to emails as to traditional mail made opting out from state church possible via email.<sup>9</sup> This inspired a society of atheists, called Free-thinkers of Finland, to launch a website, through which the opting out announce-

---

<sup>8</sup>The revised Law of freedom of conviction (6.6.2003/453) was passed on June 6, 2003 and put into action on August 1, 2003.

<sup>9</sup>The Law on electronic communication in the activities of public authorities (24.1.2003/13) was passed on January 24, 2003.

ment can be filed online for free by filling a form. The name of the website is [www.eroakirkosta.fi](http://www.eroakirkosta.fi), which directly translates to English as [www.optoutfromchurch.fi](http://www.optoutfromchurch.fi) (henceforth simply the "website"), and it has gained rapidly in popularity since its launching in November 2003. Meanwhile, the yearly rate of people opting out has increased nearly at the same rate as the increase in people opting out via the website. This suggests that the increased rate of opting out is explained by people that would not have opted out without the presence of the website but after its launching found it worthwhile.

We look at the complete daily data for years 2006, 2007, and 2008 on individuals who opted out from state church through the website. This data was obtained from the website providers. We have information on age, gender, municipality of residence and exact time of sending the online form. In year 2006, roughly 29,500 persons opted out from state church using the website (84.4 percent of the total number of opting outs), in 2007 the same number already exceeded 32,800 (86.7 percent of the total number of opting outs).<sup>10</sup> This data does not allow for formal econometric analysis but combined with the aforementioned institutional features it enables us to form some stylized facts about people's opting out behavior. Given that the cost of the last year of membership is pre-determined, we can make inferences about people's behavior based on their timing of opting out over the calendar year. If the benefits from belonging to church were zero, we would not expect to observe any pattern in the timing of people's filing of the opting out announcement, only an in time

---

<sup>10</sup>The website conducts a voluntary online survey for a random sample of online-leavers. In August 2010 roughly 2,446 individuals were shown the survey and 612 responses were received. 28 percent of the responses included the words tax or money.

uniformly distributed stream of people who opt out.

Figure 1 presents the monthly opting out frequencies in 2007. The immediate observation is that the frequency of people opting out is steadily increasing from June onwards until December. Bearing in mind that the monthly church tax is paid for the entire year in the year of opting out, the increase towards the end of the year suggests that people optimize membership by delaying the opting out decision. The two other peaks, January and April coincide with the press release of the previous year's opting out statistics by the website providers and the tax proposal for year 2006 respectively.<sup>11</sup> Those who turned 18 in year 2007 are excluded from the data because they are expected to opt out on different grounds than the rest of the population as anyone is legally allowed to opt out (without the parent's permission) only the day after she turned 18.

Figure 2 shows the daily opting out frequencies during December 2007. The highest frequency (which also is the maximum daily frequency of the whole year) coincides with the last working day of the year, which is New Year's Eve. This strengthens the view that individuals who opt out have a tendency to delay their opting out announcement as long as they do not incur additional costs of belonging to church. Another interpretation of the figures is that a large part of the people who opted out would still belong to church if membership were free.

The individuals who opt out through the website arrive to the website through different paths of which Google search engine is one of the most frequent gateways. By looking at the reference paths of those who ended up at the website via Google

---

<sup>11</sup>The tax proposal for the previous year's taxes arrives by mail traditionally during the first weeks in April.

(and opted out via it during the same session) we can form a picture of potential reasons for opting out. Most people "googled" some combination of the words "opt(ing) out", "from", "church". However, a considerable number of persons ended up opting out by entering some combination including the word "tax" in the Google search engine. Figure 3 depicts the monthly pattern of "Google tax"-ratios, i.e., the monthly number of people who entered by "googling" on the word tax in relation to the total number of opting outs that month. We find the same monthly pattern here, that is, the word tax becomes a more common search criterion towards the end of the year. This observation suggests that the mass of people who opt out for tax reasons is thicker towards the end of the year. We do the same descriptive analysis for year 2006 and find no difference in the patterns, suggesting regularity in the opting out behavior of people.<sup>12</sup>

The stylized fact that we can take home from the above descriptive exercise is that: when people do not incur additional costs from belonging to church they delay their opting out announcement. While the website data allows us to analyze people's opting out behavior and gives some indications that church tax matters in peoples opting out decision, we need more detailed data to evaluate whether tax incentives play a significant role relative to other factors in making the participation decision. The empirical analysis in this paper is based on individual-level income and tax data linked to individual and household characteristics.

---

<sup>12</sup>We look separately at the website data for years 2006 and 2008. The pattern of opting out is essentially the same in these years. The corresponding Figures 1, 2, and 3 for these years are available from the authors.

## 3 Empirical Analysis

### 3.1 Data

We use the Finnish Longitudinal Employer-Employee Data (FLEED) released by Statistics Finland and containing information on all Finnish individuals in the age group 16-70 years living in Finland. Our panel contains a random sample of 1/3 of the total population between the years 1996 and 2006. There are 10,501,554 individual/year cells for 1,142,977 individuals in the data.<sup>13</sup> Appendix A describes the variables and sample selection.

FLEED does not contain a specific variable on membership to state church. We infer church membership of an individual in a particular year from the information on whether she paid church tax during that particular year of observation. The individual-level variation over time in church tax paid results from two components: municipality-specific changes in the church tax rate and changes in the individual's own taxable income. The tax base for the church tax consists of wage and taxable transfers less deductions. This tax base is the same as for the local income tax. Thus, a person who did not pay any church tax in year  $t$ , but paid local income tax in the same year must have opted out from state church before the start of the calendar year  $t$ .<sup>14</sup>

To address our research question it is also key to determine how much each non-member would have paid in church tax each year had she been a member. The

---

<sup>13</sup>Of the 1,142,977 individuals in the data 48,013 changed their membership status once, 4,883 did so twice, and 502 did so more than twice between 1996-2006.

<sup>14</sup>We exclude all individual/year cells with zero local income tax.



computed church tax for non-members is based on their taxable pay roll analogously to the way the tax is calculated for members. More precisely, taxable gross wage including transfers less deductions is multiplied by the relevant church tax rate for the municipality of residence in year  $t$ .<sup>15</sup> We cross validate our method for calculating the hypothetical tax values by comparing them with the observed church tax for the observations with non-zeros for church tax. The correlation between computed church tax and the observed church tax is 0.99 for members. In what follows we use the computed tax measure for both members and non-members. Figure 4 shows that the distribution of the ratio of computed church tax and the observed church tax for church members is narrow with most observations obtaining the same value using our computation method as the observed tax paid. The scatter plot in Figure 5 brings further support for the accuracy of our method since most of the mass concentrates on the 45 degree line. Table 1 presents the summary statistics of the data for our sample.

## 3.2 Regression results

To investigate systematically how church membership varies with the church tax paid we estimate by a linear probability model with individual fixed effects:

---

<sup>15</sup>Since transfers and deduction are not available in FLEED we obtain the correct tax base (wage - deductions + transfers) for each individual/year from the Tax Income Database at Statistics Finland.

$$\begin{aligned} \text{Member}_{it} = & \beta_0 + \beta_1 (\text{Church Tax})_{it-1} + \beta_2 (\text{Household Income})_{it-1} \\ & + a'X_{it} + \lambda_i + \gamma_{\text{county}} + \tau_t + \varepsilon_{it}. \end{aligned} \quad (1)$$

The outcome variable is a dummy variable for membership to state church of individual  $i$  in year  $t$ . The explanatory variable of interest is computed church tax liability in year  $t - 1$ . Household income is the sum of gross wage and capital income of the household and is included to control for the income effect that expands the budget set. Church tax and household income are not collinear as church tax is levied on individual income.<sup>16</sup> Moreover, variation in church tax rates and the Finnish dual income tax system imply differential variation in income and church tax even for singles. The correlation between the church tax variable and the income variable is roughly 0.5. We include a vector of time-varying individual and household characteristics,  $X_{it}$ , and vectors of individual, county, and year dummies.<sup>17</sup> The inclusion of individual fixed effects eliminates all time-invariant individual heterogeneity and identification is based on variation in individual church tax liabilities over time. In other words, all omitted variables that may be correlated with church tax and are constant over time, such as presumably norms and values related to one's family and upbringing, are controlled for. County fixed effects control for unobserved regional differences in the quality of services provided by the church and other regional factors.

---

<sup>16</sup>The spouse identifier is non-missing only for the married individuals or the ones cohabitating. For, e.g., singles the household income variable will be the sum on their payroll and capital gains.

<sup>17</sup>Although the Church tax rate varies within municipalities over time in the data, the researcher only observes the county identifier (not a municipality identifier) for each individual. This way Statistics Finland prevents the potential identification of individuals.

In some specifications we also include time-specific county fixed effects to control for regional shocks. Individual and household characteristics included in the regression are a dummy for kids in the household, a dummy for whether the adult members of the household are married, a dummy for whether the individual is divorced, five dummies for level of education and eight dummies for household size.

Results from estimating equation (1) are presented in Tables 2-4. Table 2 shows a consistent, negative effect of the amount of church tax paid in year  $t - 1$  on the probability of being a member of state church in year  $t$ . The coefficient -0.0102 in the first row and column represents the marginal effect,  $\beta_1$ , multiplied by one standard deviation of church tax. The coefficient implies that a one standard deviation (143 euros) increase in church tax in year  $t - 1$  leads to a 1.02 percentage point decrease in the probability of being a member of the church in year  $t$ . The estimated impact of church tax is 0.59 percentage points in column 2 where year dummies are included. In the most demanding regression in column (4) (including year\*county dummies) the response is down to 0.50 percentage points, still being statistically significant at 1 percent level.<sup>18</sup> Considering that a one standard deviation increase in church tax corresponds to a 63 percent increase in the price of membership on average, the effect is not economically significant. The price elasticity of church membership for the coefficients obtained in the regression reported in column (4), evaluated at the means of all variables, is roughly -0.01.

Instead of reporting the year effects in Table 2, we depict them in Figure 6 for the

---

<sup>18</sup>We also test for forward looking behavior by including contemporaneous church tax instead of its first lag in the equivalent regression as the one reported in column (4) of Table 2. We find significantly weaker effects. The coefficient ( $t$ -statistic) for current church tax, reported equivalently as in Table 2, is -0.0022 (15.52).

whole sample (regression reported in column (3) of Table 2) and in Figure 7 for singles (column (1) of Table 3). Membership is trending negatively throughout the entire period of observation but there is a clear kink in the trend in 2003. The probability of membership dropped by an average annual rate of roughly 0.1 percentage points during the years 1998-2003, i.e., the years preceding the law reform, and by an average annual rate of 0.6 percentage points during the post-reform years 2004-2006. Joining was not facilitated in any way in 2003, thus, conditional on all other things affecting the opting out behavior being continuous in 2003, the kink can be attributed to the law reform that facilitated opting out and the website. Additional descriptive statistics reported in Table B-1 of Appendix B shows that the rate of adults joining church after having opted out at some point after age 18 has remained constant over time, suggesting that the kink in the year effects is driven by the law reform and not a simultaneous drop in the overall popularity of the church.

The coefficient on income is positive in column (1) of Table 2 but becomes negative in columns (2)-(4) when more controls are included. The magnitude of the coefficient is small in all specifications. The negative coefficient on income suggests that church membership may be an inferior good which is substituted by other types of consumption goods as income increases. In good times the range of consumption opportunities is greater and time and resources may be spent on secular opportunities. Hungerman and Gruber (2008) find that religious participation is affected by secular competition for temporal and monetary resources. Note however, that we unfortunately lack the data needed to calculate disposable household income. We argue however that our proxy for disposable income, i.e., gross household income,

captures sufficiently well demand responses to income changes. Thus the effect of church tax is clean from income effects.

Table 3 reports the results from estimating equation (1) for subsamples by household type. The coefficients once again imply the product of  $\beta_1$  and one standard deviation of Church Tax. The results show that singles tend to be most responsive to changes in church tax whereas couples without children are the least responsive. The coefficient on income is negative for all subgroups while being the least negative for couples with children.

In Table 4 the results from a similar exercise as in Table 3 are reported, the argument defining the subgroups this time being age. The church tax estimate is more than twice as large for young adults ( $\leq 30$  years) as for the middle-aged (31-55 years). For the elderly ( $56 \leq$  years) the church tax estimate is positive. While statistically significant, the coefficients are still small in magnitude and thus far from being economically significant.

## 4 Conclusion

This paper examines the effect of the cost of church membership in the form of church tax on church membership decisions. Analysis of data on the timing of online-opting-outs confirms that church tax does play a role in the membership decision. We quantify the effect of church tax by estimating the effect of church tax liability on church membership status while controlling for individual-level fixed effects and a rich set of control variables. The structure of the Finnish income tax system

allows us to separate the effect of church tax from the effect of income. We find that church tax has a negative and statistically highly significant effect on the membership probability. However, our core estimates imply that the price elasticity of church membership is very low. The price elasticity of church membership evaluated at the means of all variables is roughly -0.01. Thus, the participation decision seems to be mainly driven by non-economic variables. Another implication of our findings is that the Finnish state church does not appear to set tax rates so as to maximize tax revenue. According to our results, a one off 10 percent increase in the church tax in 2006 would have increased the annual tax revenue by 75 million euros (from 763 million euros to 838 million euros).<sup>19</sup>

The estimates of the year effects suggest that a law reform that made opting out from church significantly easier had a negative effect on church membership. The probability of membership dropped by an average annual rate of roughly 0.1 percentage points during the pre-reform years 1998-2003 and by an average annual rate of 0.6 percentage points during the post-reform years. Extrapolating our results out of sample to a counterfactual in which online opting out were not made possible through a law reform in 2003 and the number of opting outs remained at the pre-reform rates (and rate of deaths, number of baptizings and tax rates remained the same), the church would have had roughly 65,000 more members in 2006, i.e., the existence of the website has until the end of 2006 implied a roughly fifteen times larger loss of members than one incurred by a one off 10 percent increase in tax

---

<sup>19</sup>The number of members were 4,348,442 in 2006. A -0.01 elasticity coefficient implies a 0.1 percent decrease in membership from a 10 percent increase in prices, i.e., a loss of 4,348 members. At the average church tax in 2006 ( $\approx 267$  nominal euros), the loss through decreasing membership caused by a 10 percent increase in tax rates implies  $\approx 1,2$  million euros.

rates.

Our estimates for the price elasticity of church membership suggest that, even though many people who leave church may perceive the high cost as the principal reason for opting out, at the level of the whole population membership decisions are not very sensitive to economic factors. Our analysis shows that the church membership decision is characterized by a high degree of inertia. People tend to adhere to the default option regardless of the price of membership but the advent of technologies such as online opting-out may make a difference to the opting-out behavior.<sup>20</sup> The dynamism of church membership has increased significantly since 2003 when the opening of the opting-out website increased the annual amount of leavers as opposed to joiners. The out-flow from church triggered by the website may weaken somewhat over time as the pool of potential leavers who take advantage of the new opting-out technology runs dry. The resulting transition towards a church with fewer members is likely to persist unless the joining patterns change. As the population is aging the demographic changes are also not on the state church's side as fewer children are likely to be baptized relative to the number of late members.

## References

- [1] Deheija, R., DeLeire, T. and Luttmer, E., 2007. Insuring consumption and happiness through religious organizations. *Journal of Public Economics* 91, 259-279.

---

<sup>20</sup>Tendency to adhere to the default option has been documented, for instance, in participation to pension saving programs (Madrian and Shea 2001).

- [2] Francis, L. L., Katz, Y. J., 2000. Joining and leaving religion: Research perspectives. Gracewing, Herefordshire, UK.
- [3] Gruber, J., 2005. Religious market structure, religious participation, and outcomes: Is religion good for you? *Advances in Economic Analysis & Policy*, Vol. 5, Iss. 5., Article 5.
- [4] Gruber, J., 2004. Pay or pray? The impact of charitable subsidies on religious attendance, *Journal of Public Economics* 88, 2635–2655.
- [5] Gruber, J., Hungerman, D. M., 2007. Faith-based charity and crowd out during the Great Depression. *Journal of Public Economics* 91, 1043–1069.
- [6] Gruber, J., Hungerman, D. M., 2008. The church versus the mall: What happens when religion faces increased secular competition? *Quarterly Journal of Economics* 123, 831–862.
- [7] Heino, H., Salonen, H., Rusama, J., Ahonen, R., 1997. Suomen Evankelis-Luterilainen Kirkko Vuosina 1992-1995. (Engl. The Evangelical Lutheran Church of Finland between years 1992-1995). Kirkon tutkimuskeskus. Tampere.
- [8] Hungerman, D. M., 2005. Are church and state substitutes? Evidence from the 1996 welfare reform. *Journal of Public Economics* 89, 2245–2267.
- [9] Iannaccone, L., 1998. Introduction to economics of religion. *Journal of Economic Literature* 36, 1465-1495.



- [10] Lumijärvi, J., 1998. Miksi kuulua kirkkoon? Espoolaisten kirkkoon situotuminen1990-luvulla. Publications of the Department of Practical Theology, University of Helsinki, No. 91.
- [11] Madrian, B.C., Shea, D.F., 2001. The power of suggestion: Inertia in 401(k) participation and savings behavior. Quarterly Journal of Economics 116, 1149–1187.
- [12] Richter, P., Francis, L. L., 1998. Gone but not forgotten: Church leaving and returning. Dartman, Longman & Todd, London.

## Tables

Table 1. Summary Statistics

	Observations	Mean	Std.Dev.
Member of state church (pct)	10,501,554	0.85	0.36
Real church tax	8,915,018	224,36	142,37
Computed real church tax	10,501,554	229.51	143.78
Annual real household income (1000 EUR)	10,501,554	34.00	23.30
Age	10,501,554	44.95	13.21
Kids	10,501,554	0.39	0.49
Married	10,501,554	0.54	0.50
Divorced	10,501,554	0.13	0.33
Years of education	10,501,554	12.49	3.27
Family size	10,501,554	2.56	1.35

Table 2. The Effect of Church Tax on Church Membership

Dependent variable: (Member of State Church) <sub>t</sub> (yes=1)				
	(1)	(2)	(3)	(4)
(Church Tax) <sub>t-1</sub>	-0.0102 (66.44)	-0.0059 (39.19)	-0.0051 (34.46)	-0.0050 (33.90)
(Household Income) <sub>t-1</sub> (1000 EUR)	0.0015 (15.86)	-0.0015 (13.75)	-0.0019 (18.14)	-0.0020 (18.49)
Kids			-0.0009 (3.70)	-0.0009 (3.62)
Married			0.00016 (0.61)	0.0003 (0.91)
Divorced			-0.0040 (14.57)	-0.0039 (14.26)
Observations	9,193,806	9,193,806	9,193,806	9,193,806
$R^2$	0.0020	0.0084	0.0090	0.0096

The entries in Table 2 represent the coefficients from OLS regressions multiplied by one standard deviation of the particular variable (see Table 1 for summary statistics). Robust  $t$ -statistics are reported in the parentheses. All regressions include individual fixed effects. Columns (2)-(4) additionally include year fixed effects. Column additionally (3) includes region fixed effects (19 county dummies), 4 dummies for level of education, 7 family size dummies. Column (4) additionally include region\*year fixed effects.

Table 3. The Effect of Church Tax on Church Membership - by type of household

Dependent variable: (Member of State Church) <sub>t</sub> (yes=1)			
	Singles	Couple, no kids	Couple with kids
(Church Tax) <sub>t-1</sub>	-0.0096 (26.01)	-0.0036 (15.29)	-0.0029 (14.77)
(Household Income) <sub>t-1</sub> (1000 EUR)	-0.00030 (1.46)	-0.0021 (14.29)	-0.0010 (7.13)
Observations	2,080,219	2,847,790	3,530,701
$R^2$	0.0139	0.0066	0.0066

The entries in Table 3 represent the coefficients from OLS regressions. Robust  $t$ -statistics are reported in the parentheses. All regressions include the same controls as column (4) in Table 2 excluding 7 family size dummies, dummy for kids, dummy for divorced, dummy for married.

Table 4. The Effect of Church Tax on Church Membership - by age

Dependent variable: (Member of State Church) <sub>t</sub> (yes=1)			
	19-30	31-55	55<
(Church Tax) <sub>t-1</sub>	-0.0062 (18.04)	-0.0025 (13.43)	0.0008 (3.78)
(Household Income) <sub>t-1</sub> (1000 EUR)	0.0015 (5.37)	-0.0009 (6.56)	0.0003 (2.39)
Observations	1,441,323	5,413,285	2,339,198
$R^2$	0.0223	0.0079	0.0021

The entries in Table 4 represent the coefficients from OLS regressions. Robust  $t$ -statistics are reported in the parentheses. All regressions include the same controls as column (4) in Table 2.

## Figures

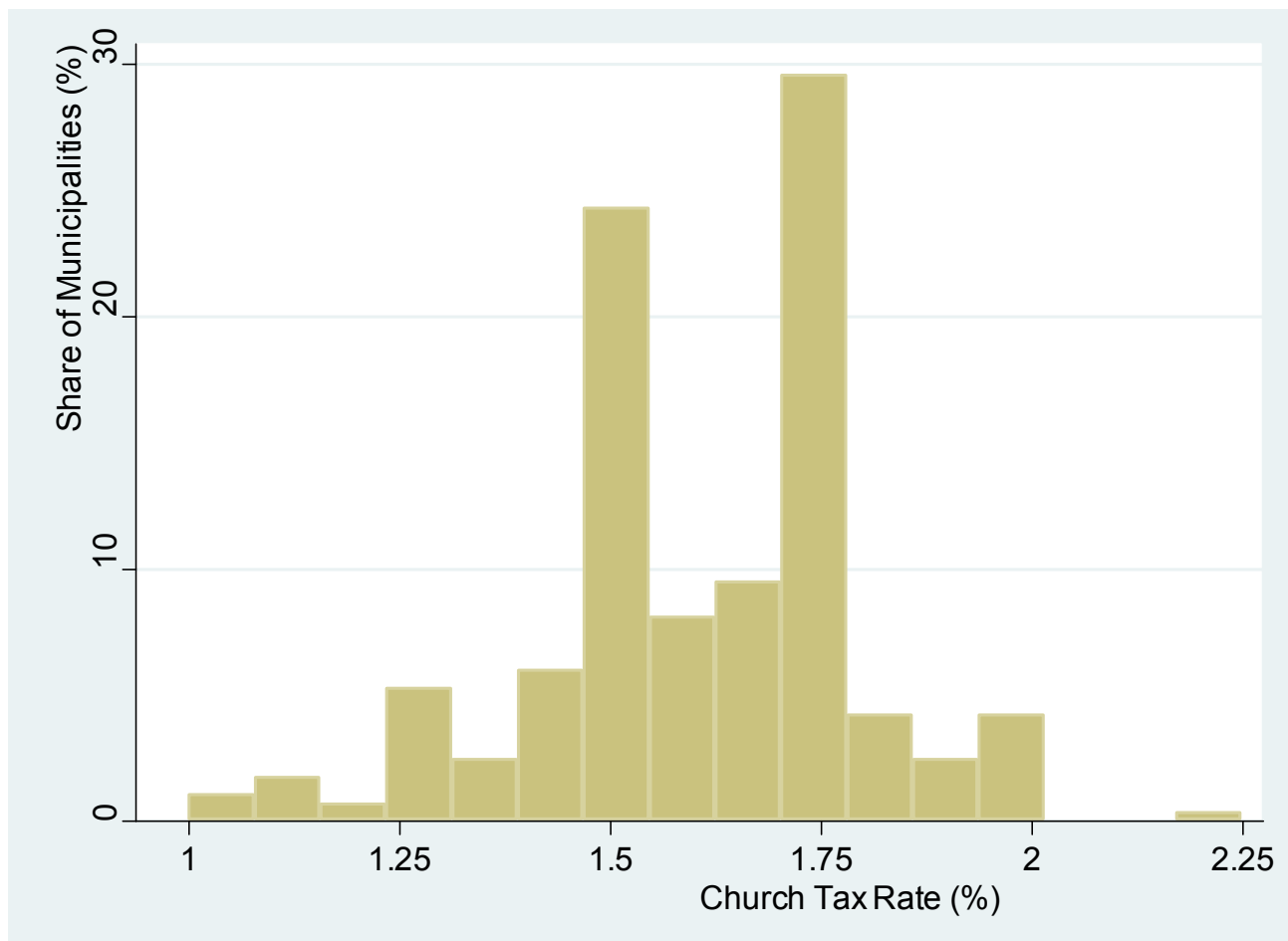


Figure 1: The distribution of church tax rates in 2006. *Source:* Evangelical Lutheran Church of Finland, [www.evl.fi](http://www.evl.fi).

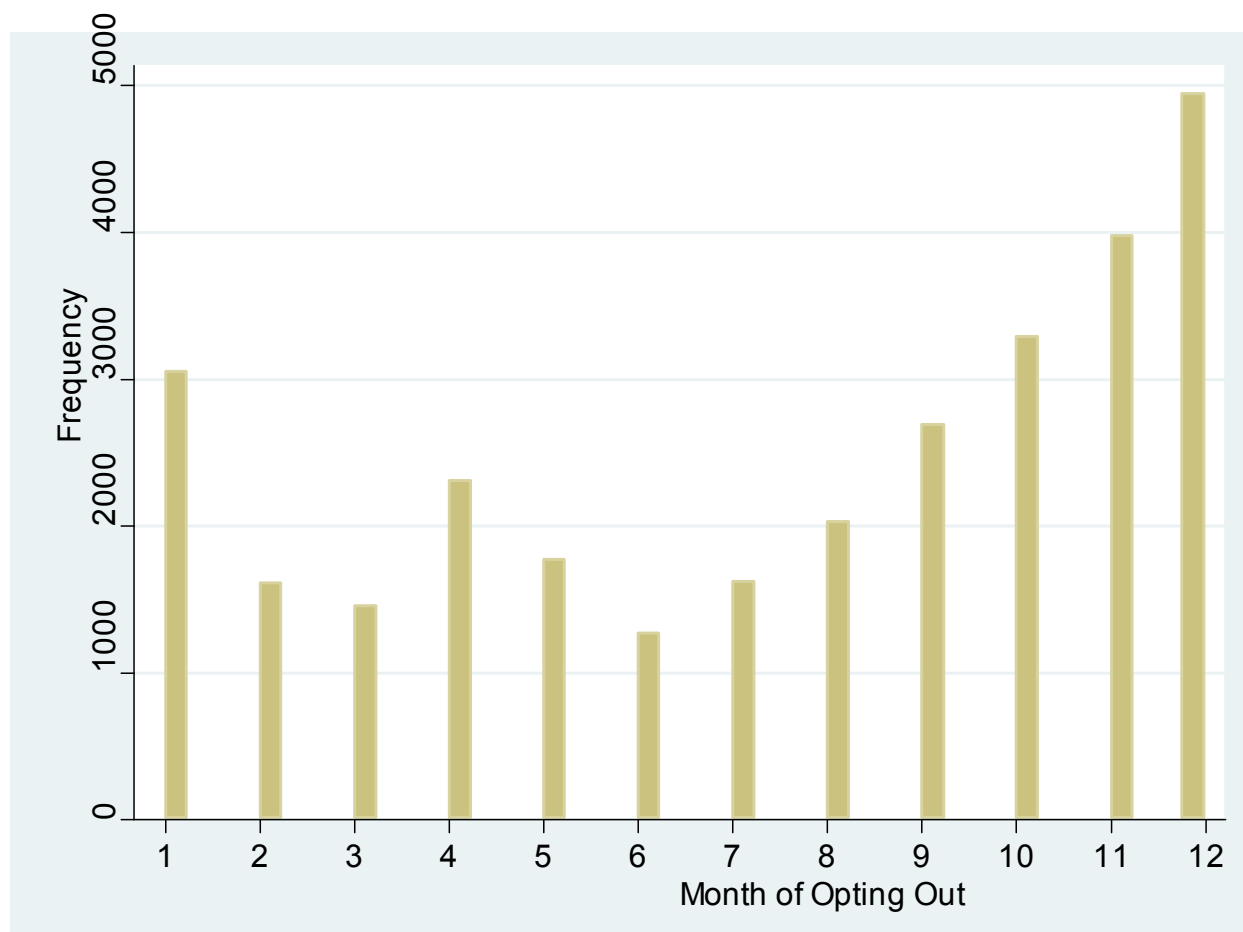


Figure 2: Monthly opting-out frequencies in 2007 (excluding all who turn 18 in 2007). *Source:* The website called [www.eroakirkosta.fi](http://www.eroakirkosta.fi) ([www.optoutfromchurch.fi](http://www.optoutfromchurch.fi)).

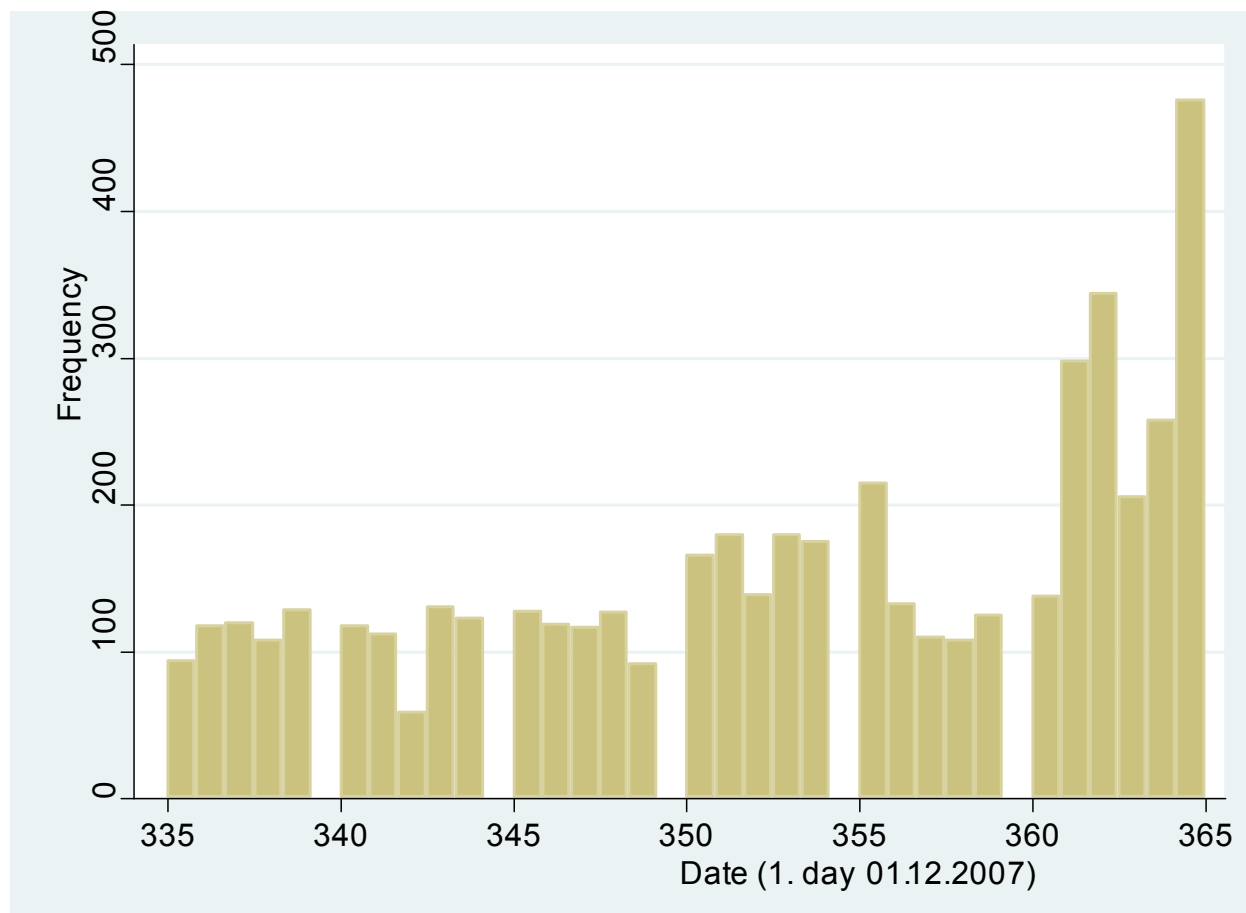


Figure 3: Daily opting-out frequencies in Dec 2007 (The last working day of the year was Dec 31). *Source:* The website called [www.eroakirkosta.fi](http://www.eroakirkosta.fi) ([www.optoutfromchurch.fi](http://www.optoutfromchurch.fi)).



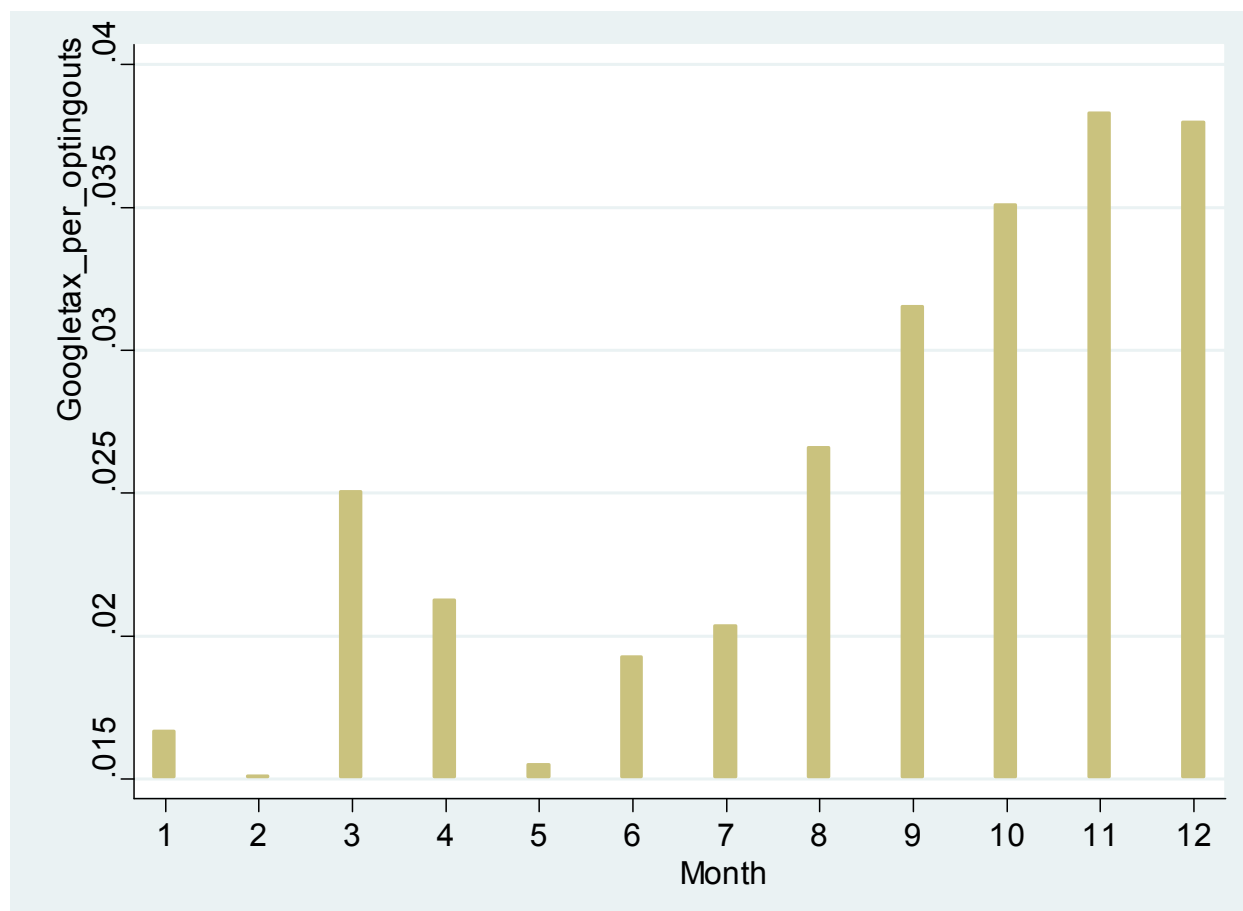


Figure 4: The monthly ratio of entering the website via googling (church) "tax" per all opting outs in each month. *Source:* The website called [www.eroakirkosta.fi](http://www.eroakirkosta.fi) ([www.optoutfromchurch.fi](http://www.optoutfromchurch.fi)).

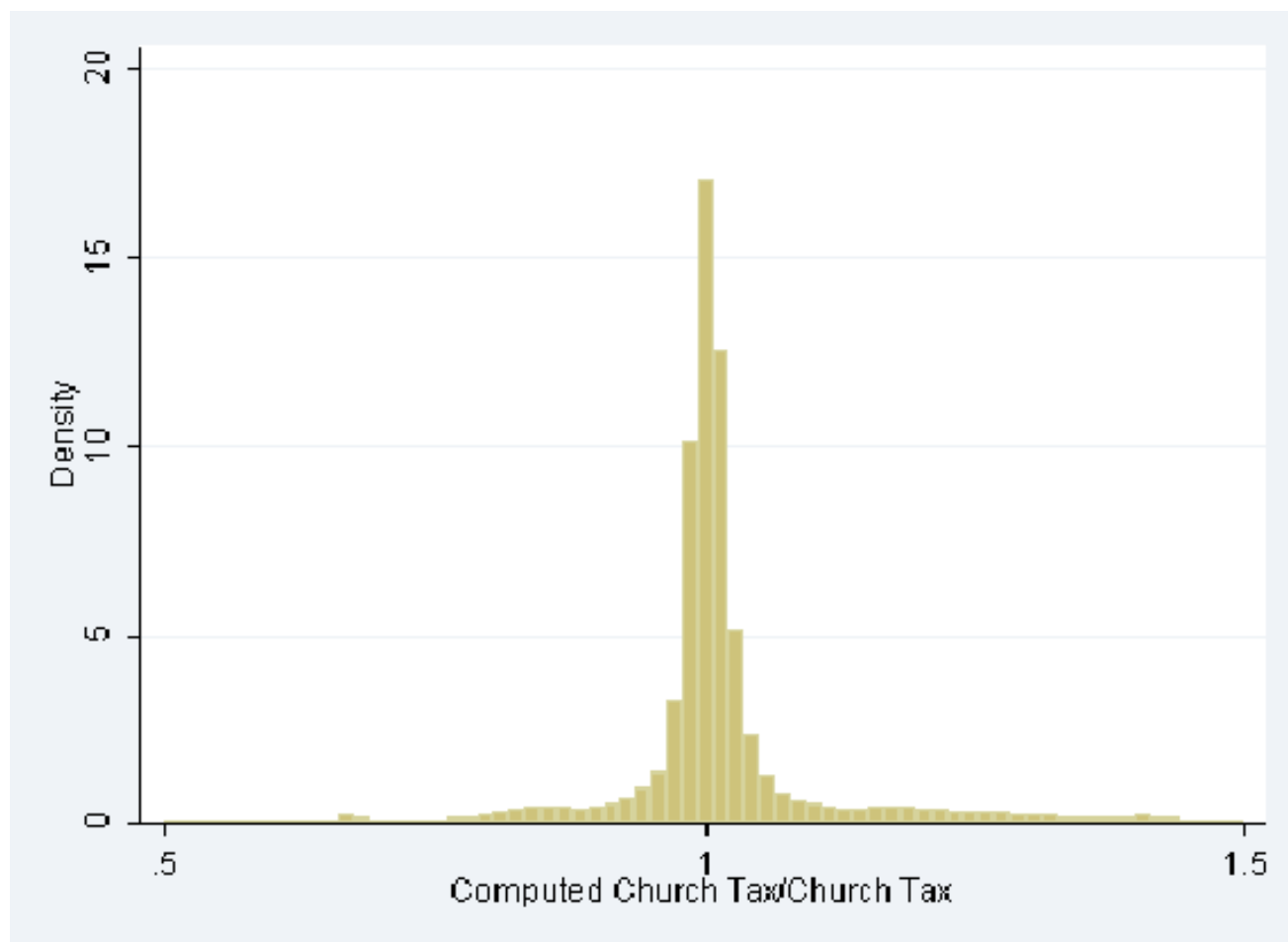


Figure 5: Distribution of "Computed Church Tax/Church Tax"-ratio for all church tax payers. *Source:* Church tax from Finnish Longitudinal Employer-Employee Data Set. For computed church tax we obtain the tax base from the Individual Tax Registry and church tax rates per municipality/year from the Income Distribution Survey at Statistics Finland.

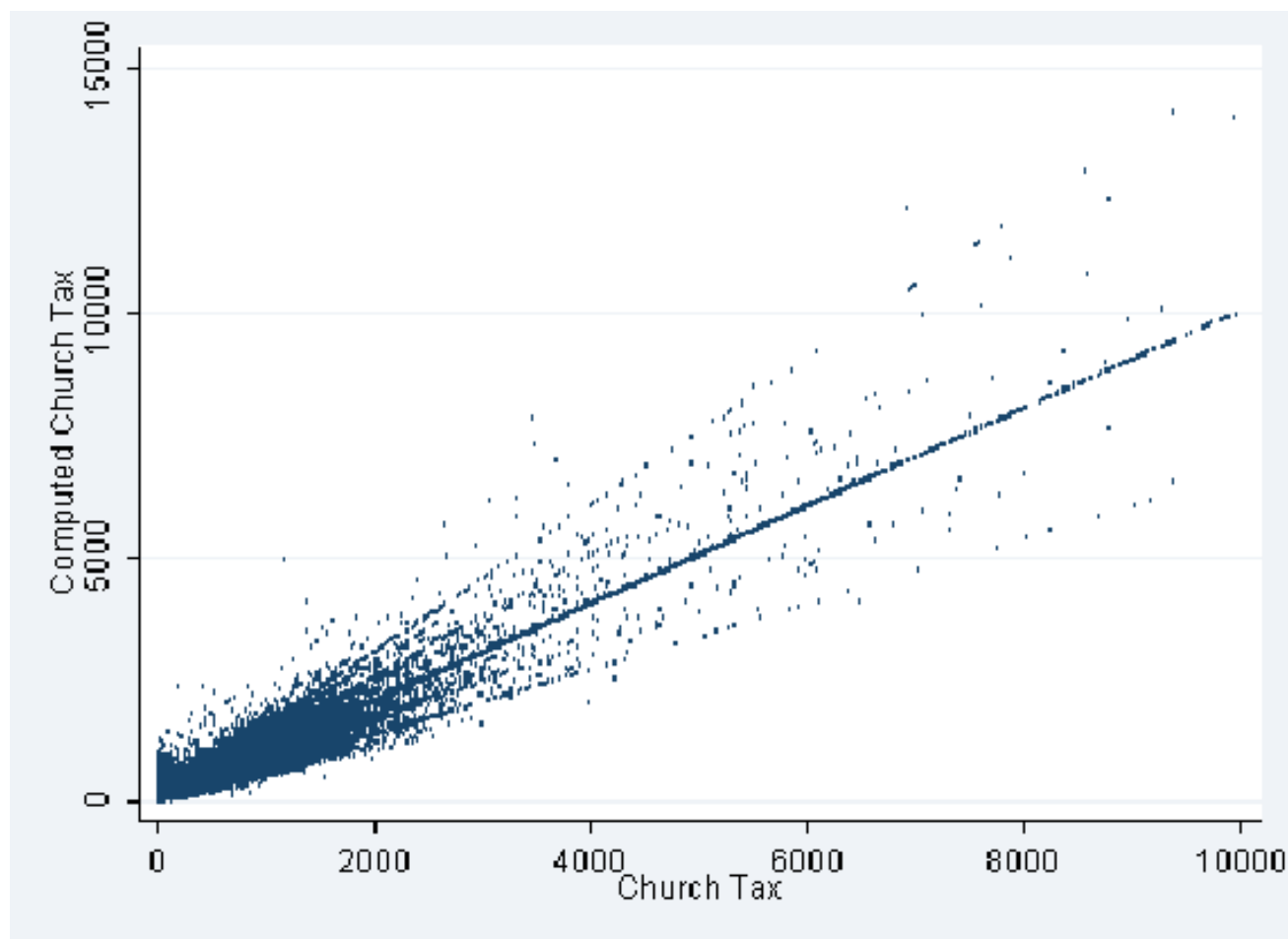


Figure 6: Plotting church tax against computed church tax for all church tax payers. *Source:* Church Tax from Finnish Longitudinal Employer-Employee Data Set. For computed church tax we obtain the exact tax base for each individual from the Taxable Income database compiled by Statistics Finland and church tax rates per municipality/year from the Income Distribution Survey at Statistics Finland.

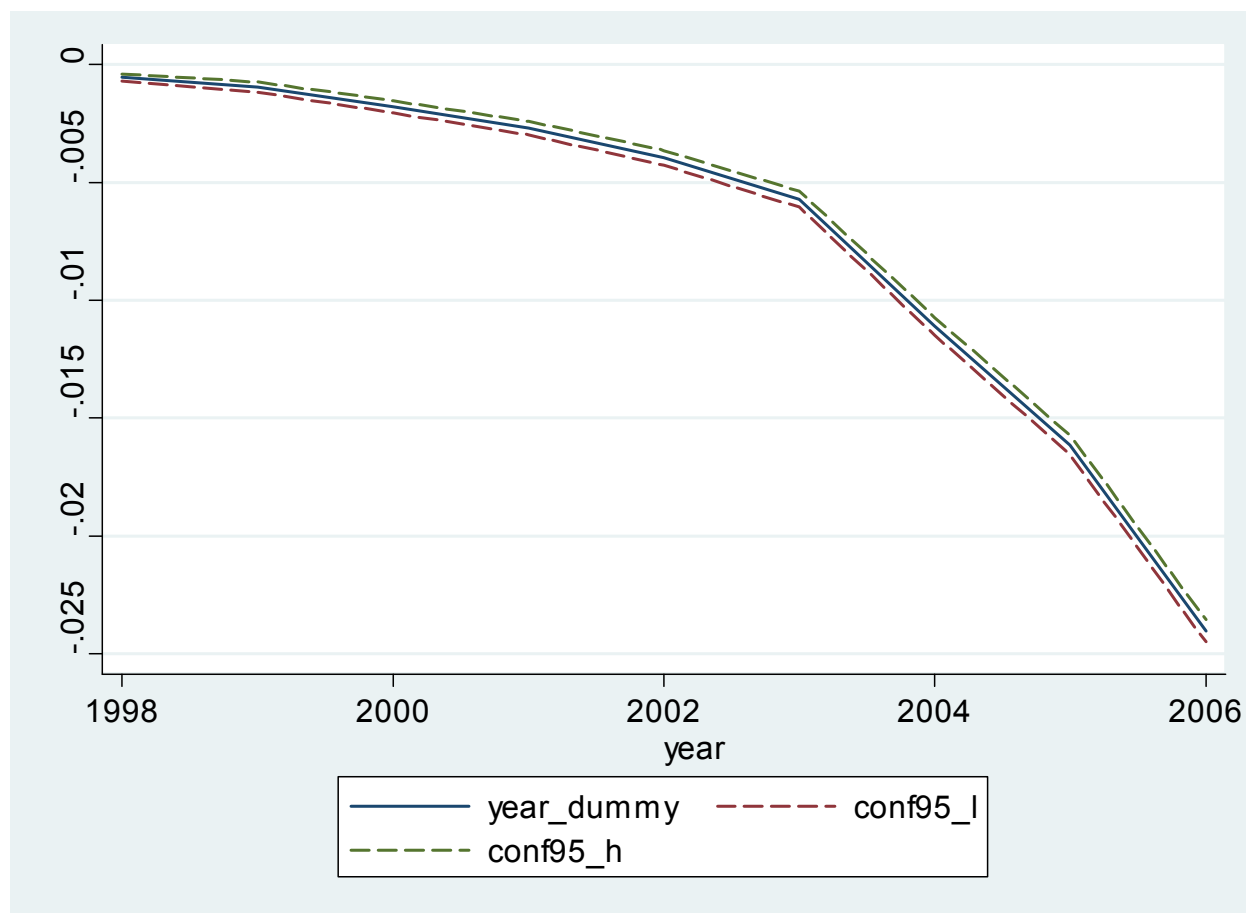


Figure 7: The coefficients for the year fixed effects in the regression reported in column (3) of Table 2.

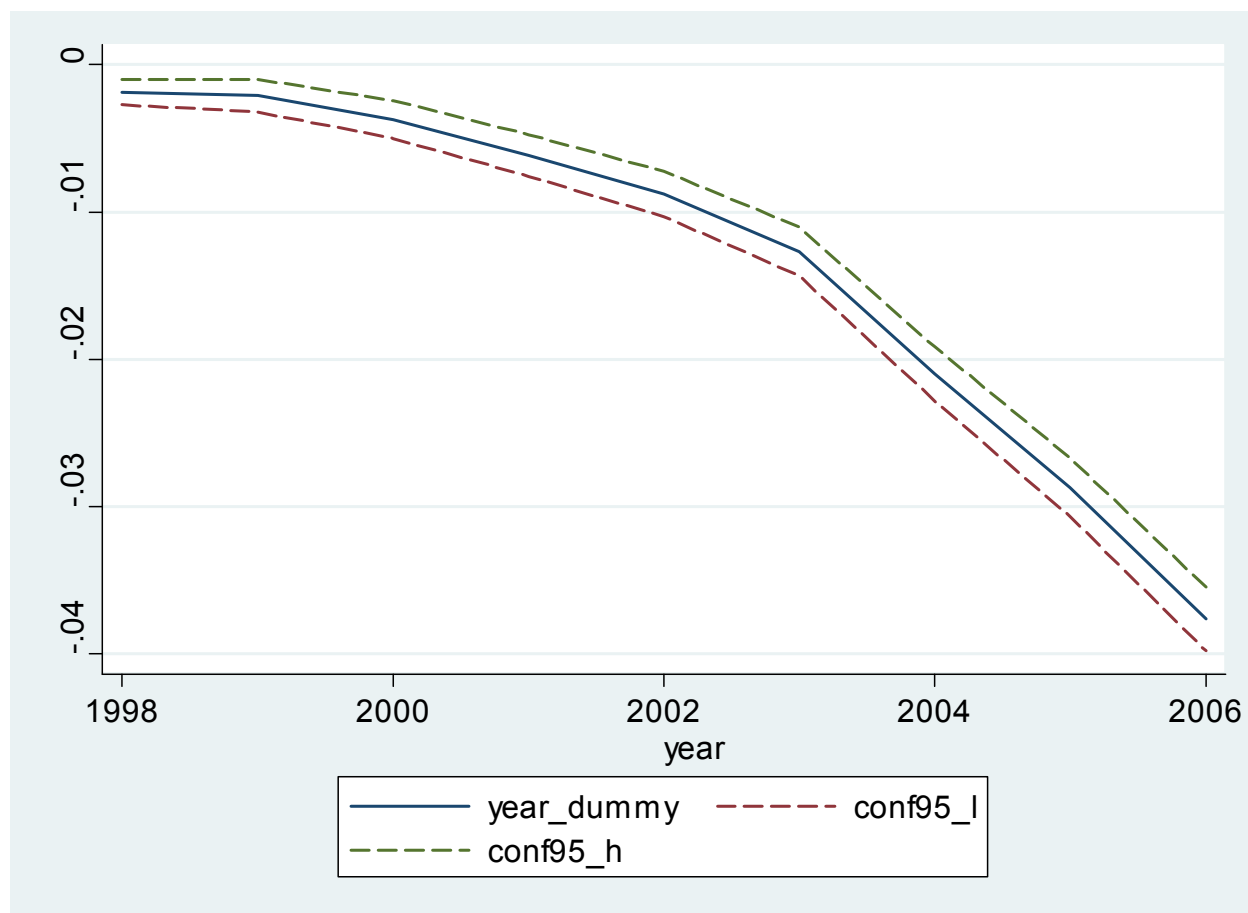


Figure 8: The coefficients for the year fixed effects in the regression reported in column (1) of Table 3.

# Appendices

## A Data

### A.1 Finnish Longitudinal Employer-Employee Data

We use the Finnish Longitudinal Employer-Employee Data (FLEED) released by Statistics Finland and containing information on all Finnish individuals in the age group 16-70 living in Finland. Our panel contains a random sample of 1/3 of the total population between the years 1996 and 2006. We drop all individuals who were younger than 19 at the beginning of the year. This is to isolate the analysis from the becoming-of-age phenomenon, i.e., it is popular among youngsters to opt out immediately when they become of age at 18 years. Since we infer membership to state church based on the church tax paid (a variable for membership is not available), we cannot be certain about membership for the nonearners. We exclude any observations for which the municipality tax paid (levied on the same tax base as is church tax) was zero. We also exclude all foreign citizens since a permanent residence permit is a prerequisite for an immigrant to become accepted as a member of the church. We further exclude any observation for which the deflated church tax paid belongs to the first or the 99th percentile and clean the data from missing values

on any of the variables included in the analysis.

### **A.1.1 Definitions of variables originating from FLEED**

*Church tax:* Annual amount of church tax paid deflated using the CPI and expressed in year 2000 euros. An individual is church tax liable always the entire year if member on January 1 during that year.

*Household income:* The CPI deflated sum of annual wage income and capital income as reported in the tax records . The variable consists of all variables with nonmissing values. For married couples the measure consists of at best of four components: the sum of wife's wages and capital income and husband's wage and capital income.

*Age:* Age as measured in years.

*Education.* Education is derived from each individual's International Standard Classification of Education (ISCED) code and measured by a five-class discrete variable with the classes being: basic education, secondary or vocational, post-secondary, bachelor's degree, and graduate and Ph.D. degrees.

*Kids:* A dummy variable that obtains value one if there are any children living in the household.

*Married:* A dummy variable that obtains value one if the individual is married.

*Divorced*: A dummy obtaining value one if the individual is divorced.

## **A.2 Tax rates**

Annual tax rates that vary across municipalities and over time are church tax and general municipality tax, both levied on the taxable wage income. Both are available from ALTIKA, a data base that contains municipality-level statistics for all Finnish municipalities and is compiled by Statistics Finland. Church tax rates vary between 0.75 and 2.25 percent within the sample and vary at most within a municipality by 0.85 percent percentage points over the period of observation. Municipality tax varies between 15.00 percent and 21.00 percent across municipality/year-cells within the sample and vary at most within a municipality by 2.5 percentage points over the period of observation.

## **A.3 Computed Church Tax**

*Computed church tax*: We obtain the church tax rates for municipality/year cells from ALTIKA. These are multiplied with the tax base, (i.e., the sum of wages and taxable transfers less deductions), for each individual in each year. Since transfers and deductions are not available in FLEED, we obtain the correctly calculated tax base for each individual over the period 1996-2006 from the Taxable Income database



originally drawn from the Finnish Tax Administration's database and compiled by Statistics Finland.

## B Leavers and Joiners

Table B-1: Individuals Joining State Church and Oping Out during 1999-2006

Year	Joiners	Leavers
1999	10,933	12,447
2000	11,220	13,566
2001	10,608	14,083
2002	10,377	16,077
2003	10,023	26,857
2004	9,365	27,009
2005	9,559	33,043
2006	10,116	34,952

Source: The Evangelical Lutheran Church of Finland; <http://evl.fi>.

## C What Does Church Membership Entitle to?

An individual who opts out from state church can still take part in religious activity by, e.g., going to Sunday service, using family counseling, assigning ones children to Sunday school or religious clubs for children, being helped by deaconal workers, and receiving charity in the form of food packages or other form of financial help if in need. All the aforementioned activities are made available to non-members,

although enjoying some of them may be facilitated by membership. The following rites, events and services within the state church of Finland are exclusively made available to members of church:

*Church wedding:* Both parts have to be members of church for a church wedding to take place. The couple can be blessed in church without being members, the procedure has however no legal consequences.

*Baptizing:* A person cannot be baptized to church without wanting to become a member of that congregation.

*Confirmation:* A person cannot go through the confirmation without being a member of state church.

*Funeral:* A christian funeral is to some extent limited to members of church, however, unless a will opposes it ones descendants can arrange a religious funeral for the deceased.

*Godparenthood:* A person cannot become a godparent to a baptized child without being a member of state church.

*Church's magazine:* Membership to state church entitles to a weekly magazine with information about religious life and activity within the congregation.

## IN VATT WORKING PAPERS SERIES PUBLISHED PUBLICATIONS

1. Tomi Kyyrä – Pierpaolo Parrotta – Michael Rosholm: The effect of receiving supplementary UI benefits on unemployment duration. Helsinki 2009.
2. Tuomas Pekkarinen – Roope Uusitalo – Sari Kerr: School tracking and development of cognitive skills. Helsinki 2009.
3. Essi Eerola – Niku Määttänen: The optimal tax treatment of housing capital in the neoclassical growth model. Helsinki 2009.
4. Sanna-Mari Hynninen – Aki Kangasharju – Jaakko Pehkonen: Matching inefficiencies, regional disparities and unemployment. Helsinki 2009.
5. Jari Ojala – Jaakko Pehkonen: Technological changes, wage inequality and skill premiums: Evidence over three centuries. Helsinki 2009.
6. Elina Berghäll: R&D, investment and structural change in Finland: Is low investment a problem? Helsinki 2009.
7. Jarkko Harju: Voluntary pension savings: the effects of the Finnish tax reform on savers' behaviour. Helsinki 2009.
8. Katariina Nilsson Hakkala – Fredrik Heyman – Fredrik Sjöholm: Multinational firms and job tasks. Helsinki 2009.
9. Seppo Kari – Hanna Karikallio – Jukka Pirttilä: The impact of dividend taxation on dividends and investment: New evidence based on a natural experiment. Helsinki 2009.
10. Sara Ayllón: Modelling state dependence and feedback effects between poverty, employment and parental home emancipation among European youth. Helsinki 2009.
11. Juha Honkatukia – Jouko Kinnunen – Kimmo Marttila: Distributional effects of Finland's climate policy package – Calculations with the new income distribution module of the VATTAGE model. Helsinki 2009.
12. Juha Tuomala: The threat effect of mandatory programme participation in Finland – A study of activation reform of the labour market support system. Helsinki 2010.
13. Ilja Kristian Kavonius: Fiscal policies in Europe and the United States during the Great Depression. Helsinki 2010.
14. Miikka Rokkanen – Roope Uusitalo: Changes in job stability – evidence from lifetime job histories. Helsinki 2010.
15. Heléne Lundqvist: Granting public or private consumption? Effects of grants on local public spending and income taxes. Helsinki 2010.
16. Ossi Korkeamäki – Tomi Kyyrä: Institutional rules, labour demand and retirement through disability programme participation. Helsinki 2010.
17. Tomi Kyyrä: Early retirement policy in the presence of competing exit pathways: Evidence from policy reforms in Finland. Helsinki 2010.
18. Tuomas Kosonen: What was actually cut in the barbers' VAT cut? Helsinki 2010.
19. Tuukka Saarimaa – Janne Tukiainen: Coalition formation and political decision making: Evidence from Finnish municipal mergers. Helsinki 2010.



VALTION TALOUDELLINEN TUTKIMUSKESKUS  
STATENS EKONOMISKA FORSKNINGSCENTRAL  
GOVERNMENT INSTITUTE FOR ECONOMIC RESEARCH

Valtion taloudellinen tutkimuskeskus  
Government Institute for Economic Research  
P.O.Box 1279  
FI-00101 Helsinki  
Finland

ISBN 978-951-561-957-0  
ISSN 1798-0283

